



# PATENT SPECIFICATION

DRAWINGS ATTACHED

89 1603

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International Classification:—H02f. H02c.

## COMPLETE SPECIFICATION

### Improvements in Appliance Plugs and Appliance Inlet Sockets for Electrical Appliances

5 We, SUNBEAM CORPORATION LIMITED, a Company incorporated under the laws of the State of New South Wales, of 192 Coward Street, Mascot, Sydney, New South Wales, Commonwealth of Australia, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to appliance plugs and appliance inlet sockets for electrical appliances. The phrases "appliance plugs" and "appliance inlet sockets" have the meanings given them in the Australian Standard Rules C109 of 1955 published by the Standards Association of Australia.

15 In those rules the phrases have the meanings assigned to them hereunder.

20 a). Appliance Plug shall mean a device intended for attachment to a flexible cord and containing contacts for the purpose of making detachable connection between the conductors of such flexible cord and contact pins mounted on or in an electric appliance or equipment.

25 b). Appliance Inlet-Socket shall mean a socket mounted on or built into an appliance or equipment and having contact pins intended for making a detachable connection with the contacts of an appliance plug.

30 The invention is particularly applicable to electric frying pans and other cooking utensils which may be wholly immersed in water for cleaning when the electric cord and appliance plug have been disconnected, and which have their temperature controlled by a thermostat which forms part of and is removable with the appliance plug.

35 This type of cooking appliance is known. The thermostat means is contained partly within a metal tube or the like sheathing, which when the appliance plug is pushed onto the contact pins of the appliance inlet socket, is

[Price 4s. 6d.]

45 inserted into a mating cavity in the metal base of the appliance.

According to one aspect of this invention an electric cooking appliance of the type which is completely immersible in water for cleaning after it has been disconnected from the associated appliance plug comprises an insulating block mounted on the appliance having at least two contact pins or surfaces spaced apart and lying on or closely adjacent a surface or surfaces thereof, an opening in the insulating block which forms a continuation of a cavity in the metal outer wall of the appliance, an appliance plug having a recess adapted to receive the insulating block, spring contact means for cooperating with the contact pins or surfaces on the insulating block, a metal sheath extending therefrom and containing at least a portion of a thermostat, the metal sheath being inserted through the opening in the insulating block on the appliance into the said cavity when the appliance plug is coupled to the appliance, an earth lead connected to the metal sheath, and means for ensuring electrical contact between the sheath and the wall of said cavity.

70 The invention further provides an electrical cooking appliance of the type which is completely immersible in water for cleaning after it has been disconnected from the associated appliance plug comprising a cavity in a metallic wall or base of the appliance, or in a metallic body attached or forming part of a metallic wall or the base of the appliance, contact pins or surfaces disposed adjacent to said cavity and connected to the heating element of the appliance, and an appliance plug having contact means therein for mating contact with the contact pins or surfaces on the appliance and a metal sheath extending from the plug body and containing at least portion of a thermostat, said metal sheath being inserted into the cavity when the appliance plug is coupled to the appliance, means for ensuring

electrical contact between the sheath and the metallic body of the appliance, and an earth lead connected to the metal sheath.

Reference will now be made to the accompanying drawings in which:—

Figure 1 is a perspective drawing of an electric frying pan having an appliance inlet socket according to the invention secured thereto and an appliance plug according to the invention separated therefrom.

Figure 2 is a side elevation of portion of the frying pan with the appliance plug partly inserted into the inlet socket on the pan.

Figure 3 is an end elevation of part of the frying pan giving an end view of the appliance inlet socket.

Figure 4 is a longitudinal vertical medial section through the appliance plug and portion of the frying pan including the appliance inlet socket.

Figure 5 is a plan view from the underside of the top half of the appliance plug.

Figure 6 is a plan view of the bottom half of the appliance plug.

Figure 7 is a section along the planes 7, 7 of Figures 5 and 6, but also showing part of the appliance inlet socket, to an enlarged scale.

Figure 8 is a detail showing the connection of the ends of the heating element to the contacts of the appliance inlet socket.

Figure 9 is a detail plan view from the underside of the frying pan adjacent the appliance inlet socket.

Figures 10 to 13 show the essential parts of a modified appliance inlet socket, Figure 10 being a longitudinal section, Figure 11 an end view, Figure 12 a view similar to Figure 10 showing a portion of an appliance plug in cooperating position with the socket, and Figure 13 a section on the lines 13—13 of Figure 12.

The electric frying pan has a cast aluminium pan 1 of approximately rectangular shape, with rounded corners and has a heating element cast into a rib on the underside of the base. The heating element is preferably of the well-known sheathed type which conventionally comprises an outer metal sheath 2 (see Fig. 8) within which is disposed a suitable length of resistance wire coiled into a helix, the helix being centred in and insulated from the sheath by an insulating refractory material, commonly fused powdered magnesium oxide. The heating element forms a loop with the two ends 5 parallel and spaced by a suitable distance. The ends of the helix are welded to metal terminal leads 3. A portion of the rib surrounding the sheath is shown at 4.

During the casting the portion between the ends 5 is filled with metal, and ends with a winged portion 6. Subsequently an opening 7 is bored centrally between the ends. The heating element and terminal assembly is of water-proof construction as by employing glass to

metal seals between the sheath 2 and the terminal leads 3.

An insulating block 8, made of a suitable heat resistant material, and of generally rectangular shape, is secured to the winged portion 6 of the pan by means of a skirt 9 and screws 10. Grooves are provided in the narrow end faces 11 of the block and contact pins or strips 12 lie in these grooves. The contact pins are secured to the ends of the terminal leads 3 as by staking or welding. As shown in the drawings the pins are initially circular in section, but flats are machined to provide a strip like contact over all but the lower end of the contact. The contact pins or strips do not extend to the end 13 of the block. A centrally disposed opening 14 in the block forms a continuation of the tubular bore 7 in the base of the pan. Suitable gaskets 15, 16 are provided.

The appliance plug 17 is made of a synthetic resin moulding comprising two halves 18, 19. One end of the appliance plug is recessed at 20 to mate with and fit over the block 8. Spring contacts 21 are secured inside this recess and when the plug is pushed into the appliance inlet socket the contacts 21 make contact with the outside surfaces of the contact strips 12 as may be seen in Figure 7.

A further tubular metal contact 22 is provided which is a free sliding fit inside the openings 14 and 7. This tubular contact acts as an earthing contact, and a spring strip 23 is staked to the pan casting and passes through a slot 24 to ride on the contact 22.

In a simple appliance plug in accordance with this invention the two power leads would be directly connected to the contacts 21 and the earthing wire to the contact 22. However the plug shown in the drawings also contains thermoresponsive means by which the temperature of the frying pan can be controlled to pre-set temperatures, a graduated knob 25 being provided which is marked with temperatures and which can be rotated to bring the desired temperature marking opposite an arrow 26. One lead 27 is connected directly to the terminal 28 to which the end of the lower contact 21 (in Figure 5) is also connected, and the earth lead 29 is connected to the rear end of a metal strip 30 whose forward end is welded to the tubular contact 22. Wing like extensions 31 are provided to help locate the contact 22 and strip 30 in the moulding. 32 marks an opening in the upper moulding half 18 in which a small indicating lamp 33, not shown connected, may be installed. The other lead 34 is connected to a terminal 35 and then, by way of the thermoresponsive means, to the upper contact 21 of Figure 5.

The general construction of the thermoresponsive means shown in the drawings is known. A bimetallic element is provided by the tubular metal contact 22 and a central rod 36 (shown in Fig. 4) of a metal having a different co-efficient of expansion welded at

the far end to the conical part 22A of the tubular member and at the rear end to a flexible extension 37 having an insulating button 38 secured thereto. As the tube 22 heats up through its contact with the base of the pan the greater expansion thereof causes the extension 37 to warp (downwardly in Figure 5 or upwardly in Figure 4). Finally the button 38 bears against the contact strip 39 and opens the contacts 40, 41, the contact 41 being carried on a spring contact strip 42. Rotation of knob 25 causes rotation of a threaded member 43 which is screwed into an opening in the central part of strip 30, and thus up and down motion of the member 43. This motion is transmitted to contact strip 42 by an insulating rod-like member 44 to vary the temperature at which the contacts 40, 41 are opened.

The essential parts of a modified construction of an appliance inlet socket are shown in Figures 10 to 12, and are for use with the appliance plug 17 of Figures 1, 2, and 4 to 6. The main differences between this appliance inlet socket and that previously described are the use of strip metal contacts 50 instead of contacts which are basically cylindrical, and in the earthing contact which consists of a thin spring metal tube 51 having its ends spun over the insulating body portion 52 at 53 and over the metal body portion 54 of the frying pan or other article at 55. Portions 56 of the metal tube 51 are pressed out to form spring contact fingers. In Figures 12 and 13 portions of the appliance plug are shown.

#### WHAT WE CLAIM IS:—

1. An electric cooking appliance of the type which is completely immersible in water for cleaning after it has been disconnected from the associated appliance plug comprising an insulating block mounted on the appliance having at least two contact pins or surfaces spaced apart and lying on or closely adjacent a surface or surfaces thereof, an opening in the insulating block which forms a continuation of a cavity in the metal outer wall of the appliance, an appliance plug having a recess adapted to receive the insulating block, spring contact means within the appliance plug for cooperating with the contact pins or surfaces on the insulating block, a metal sheath extending from the appliance plug and containing at least a portion of a thermostat, the metal sheath

being inserted through the opening in the insulating block on the appliance into the said cavity when the appliance plug is coupled to the appliance, an earth lead connected to the metal sheath, and means for ensuring electrical contact between the sheath and the wall of the cavity.

2. An electric cooking appliance as claimed in claim 1 in which the insulating block is approximately rectangular in section with a contact lying along each narrow face.

3. An electrical cooking appliance of the type which is completely immersible in water for cleaning after it has been disconnected from the associated appliance plug comprising a cavity in a metallic wall or the base of the appliance, or in a metallic body attached or forming part of a metallic wall or the base of the appliance, contact pins or surfaces disposed adjacent to said cavity and connected to the heating element of the appliance, and an appliance plug having contact means therein for mating contact with the contact pins or surfaces on the appliance and a metal sheath extending from the plug body and containing at least a portion of a thermostat, said metal sheath being inserted into the cavity when the appliance plug is coupled to the appliance, means for ensuring electrical contact between the sheath and the metallic body of the appliance, and an earth lead connected to the metal sheath.

4. An electrical cooking appliance as claimed in Claim 3 wherein the means for ensuring electrical contact between the sheath and the metallic body of the appliance is such that this electrical contact is made before the contact means for mating contact with the contact pins or surfaces makes contact with the said contact pins or surfaces.

5. An electrical cooking appliance as claimed in either of Claims 3 or 4 wherein the cavity is an elongated cylindrical cavity and the metal sheath is cylindrical and is a close fit inside the cavity.

6. An electrical cooking appliance including an appliance inlet socket and appliance plug substantially as described and as shown in Figures 1 to 9 of the accompanying drawings.

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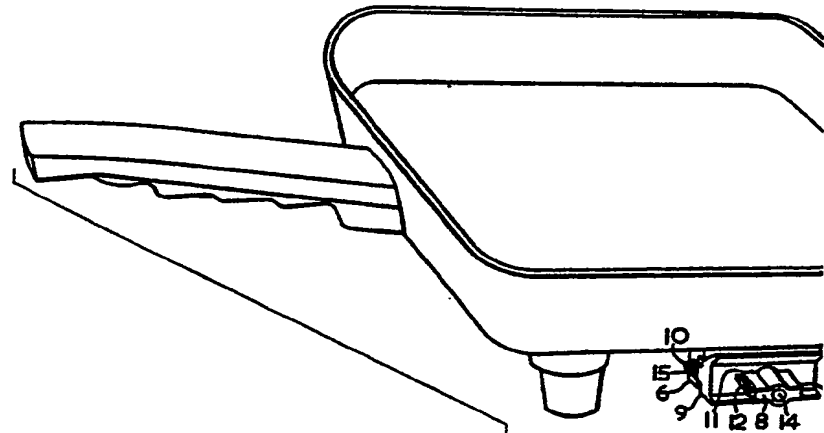


FIG. 1

A12

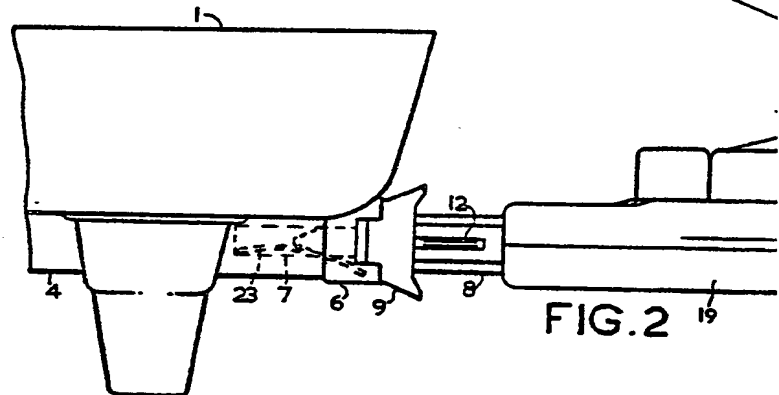
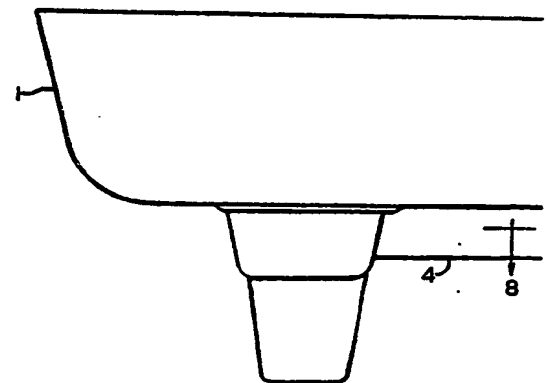


FIG. 2

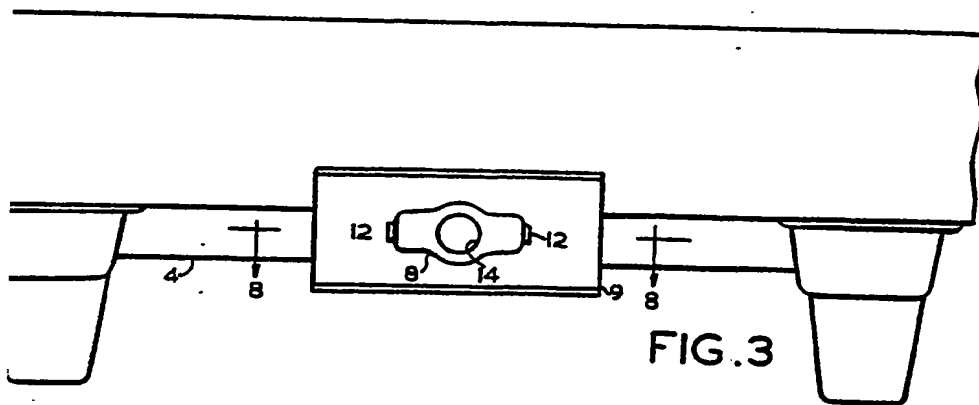
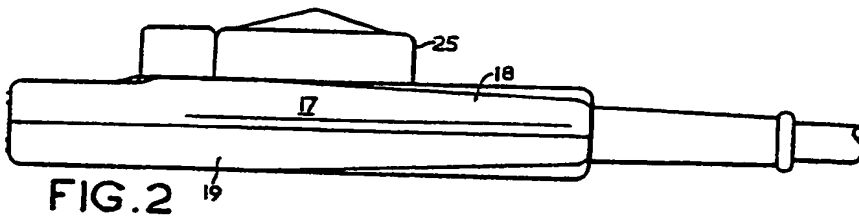
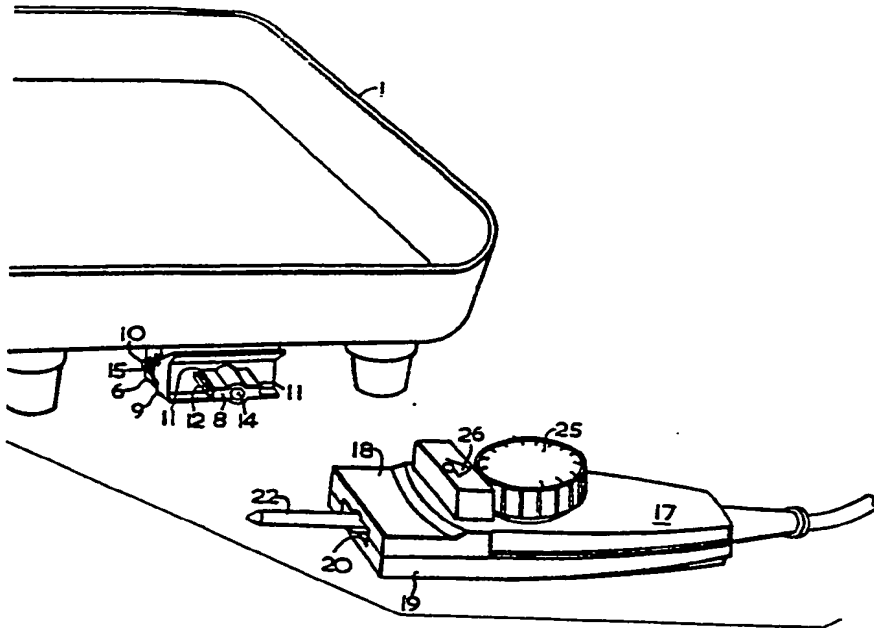


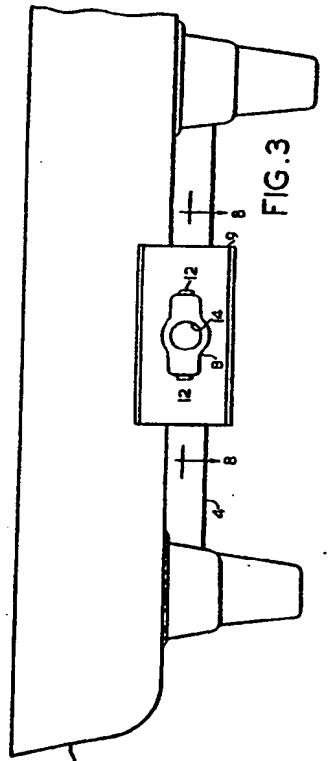
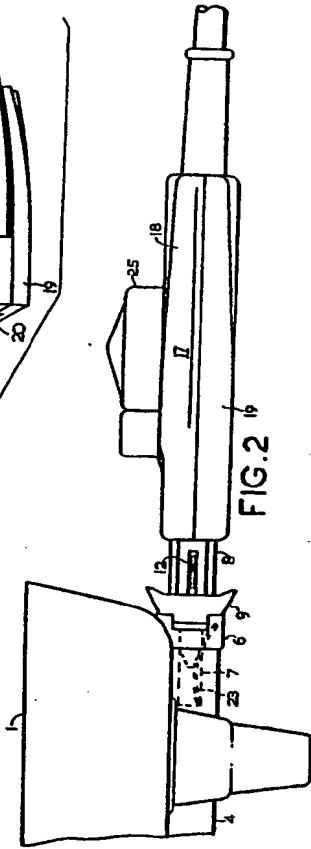
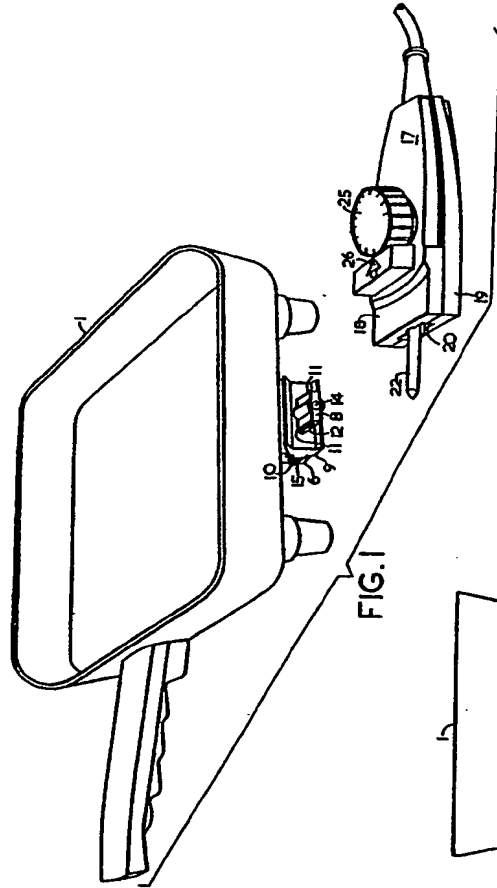
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COMPLETE SPECIFICATION

2 SHEETS

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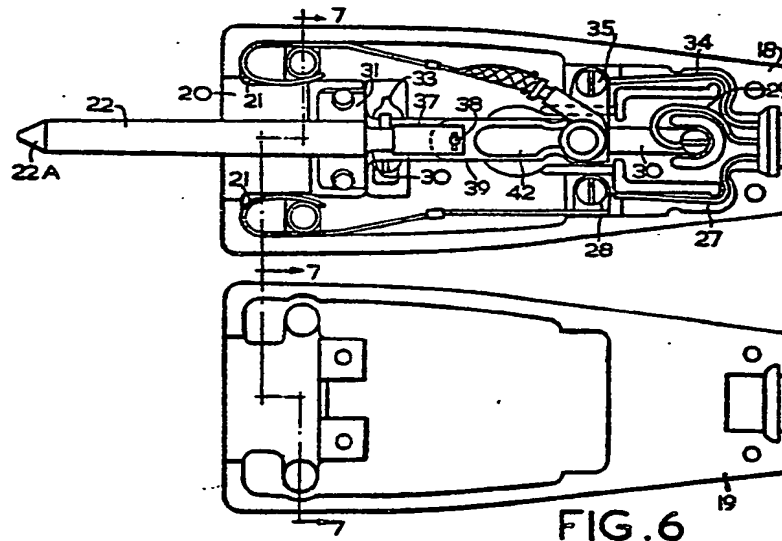
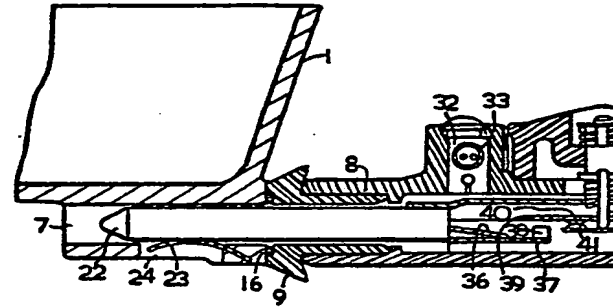


FIG. 6

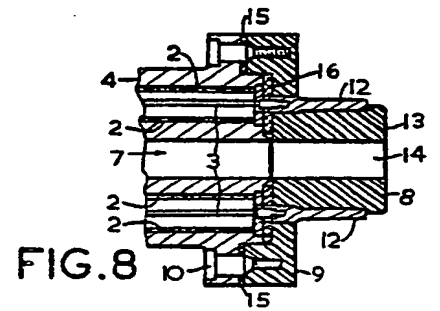


FIG. 8

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COMPLETE SPECIFICATION

3 SHEETS

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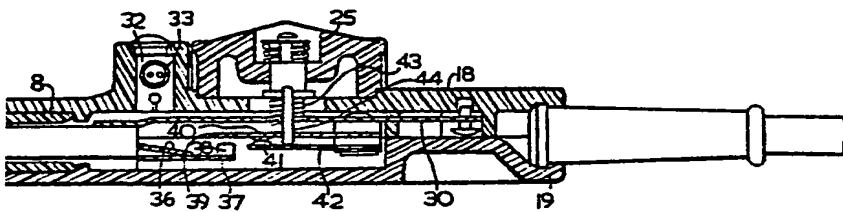


FIG. 4

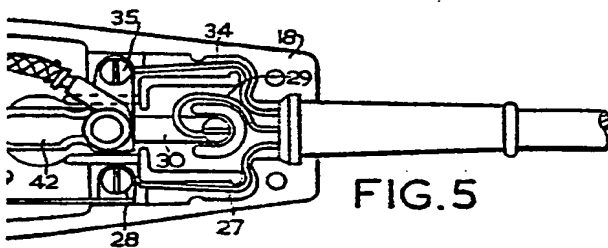


FIG. 5

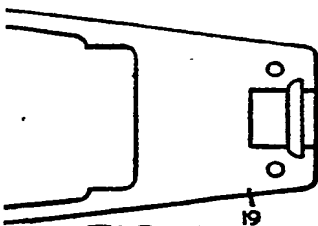


FIG. 6

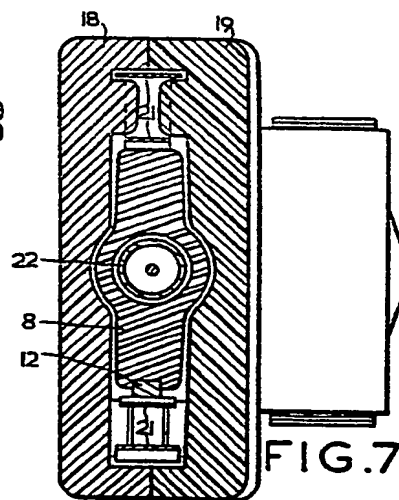


FIG. 7

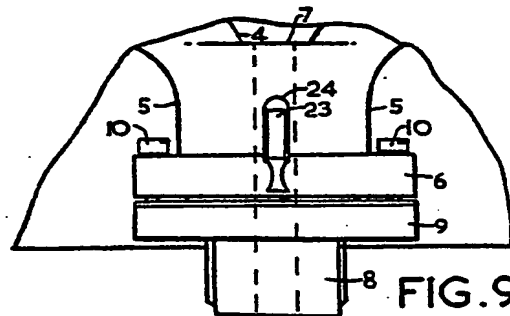
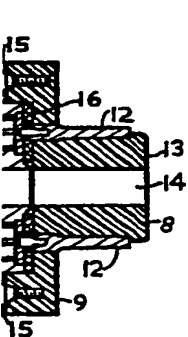
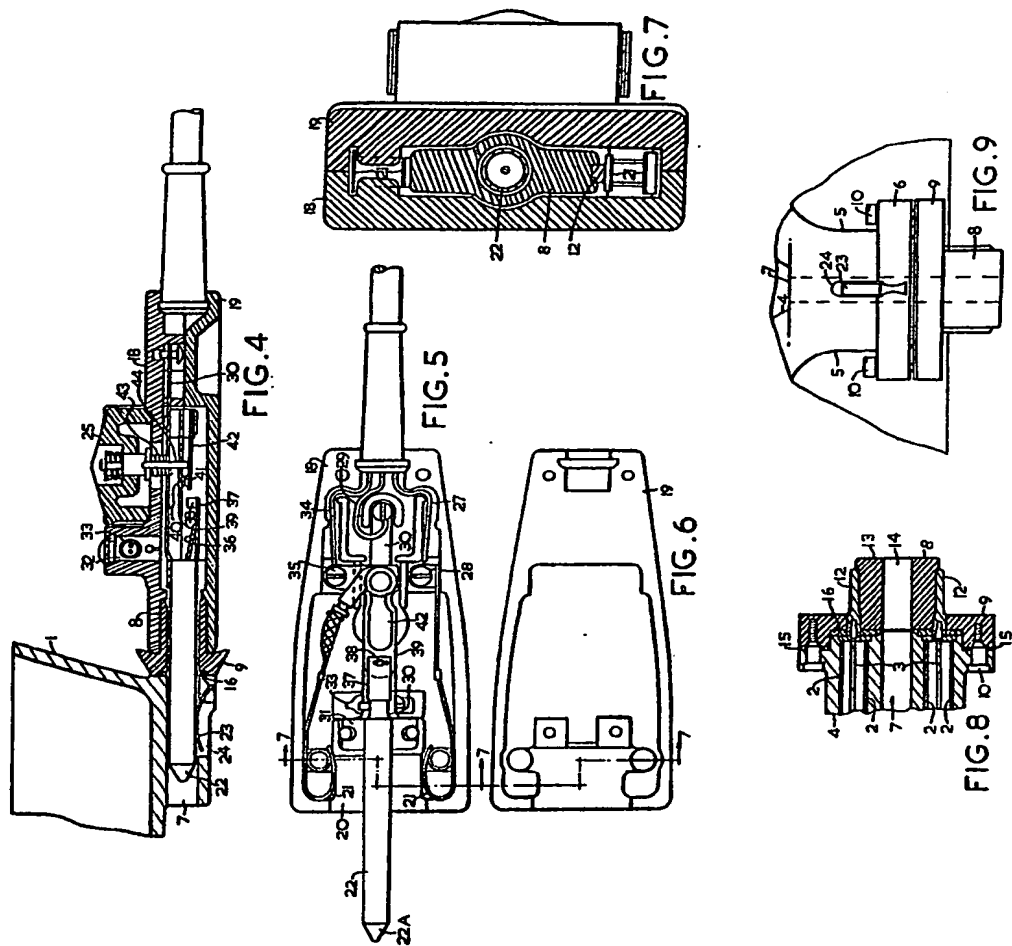


FIG. 9





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COMPLETE SPECIFICATION

3 SHEETS

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Sheet 3

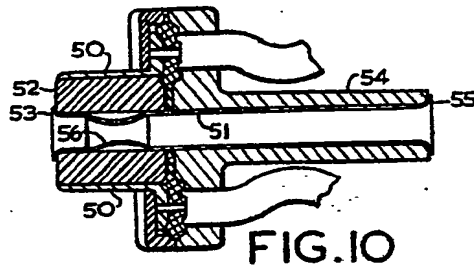


FIG. 10

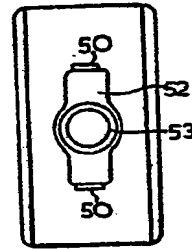


FIG. 11

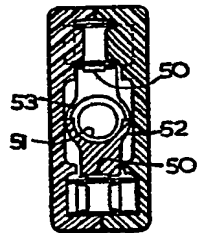


FIG. 13

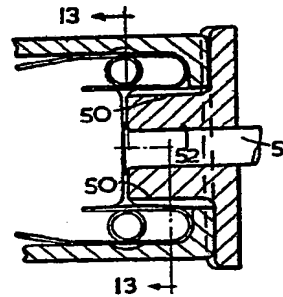


FIG. 12